REMARKS

Reconsideration and allowance of the above-referenced application are respectfully requested.

Upon entry of this amendment, claims 1-87 will remain in the application, with claims 1-7, 16-36, 45-65, and 74-87 being withdrawn.

Claim Rejections – 35 USC § 103

Claims 8-15, 37-44, and 66-73 were rejected under 35 U.S.C. 103(a) as being allegedly unpatentable over Yanagihara (U.S. Patent No. 5,374,958) in view of Reininger et al. (U.S. Patent No. 5,426,463, hereinafter "Reininger").

Applicant respectfully traverses the rejections.

Applicant teaches a video compression technique for reducing the level of chroma noise that results from any given value of the quantization parameter (QP) used during compression, thereby improving image quality. This is accomplished by utilizing a lower value of QP for the U (chroma)-channel than for the Y (luminance)-channel. Similarly, the quality of the V (chroma)-channel may also be improved by utilizing a lower QP value for the V-channel than for the Y-channel.

The Action of April 5, 2004 conceded that Yanagihara, "fails to particularly disclose quantizing the color channels with greater resolution than the luminance channel…". The Action then relied on Reininger to provide teaching for utilizing a higher quantization resolution for the color channels than the luminance channel.

The present Action states:

"Applicant's arguments filed 6/24/04 have been fully considered
but they are not persuasive. Applicant asserts on pages 2-6 of
the Remarks that there is nothing in Reininger et al that refers
to different QPs for luma and chroma. However, Figure 3 of
Reininger et al illustrates that variable QP values for one or
both of the color channels. That is, depending on the amount of
coded data, a new quantization factor 68 may be selected 27 to
provide quantization resolution 14 in the color channels."

Applicant stands by the assertion that there is nothing in
Reininger that refers to different QPs for luma or chroma.

Figure 3 of Reininger is a flowchart that shows getting a
frame 51, encoding it with a fixed QP 52, then computing the
fractional excess with respect to the total number of bits R_j
targeted for a frame of type j = {I,P,B}. This is described in
the disclosure in column 3 lines 5 through 55 and equations (1)
through (5). If the original target (total number of bits) is
met, the algorithm outputs the original QP 55, otherwise it
determines an acceptable QP and outputs that 77.

The Action is correct in that "Figure 3 of Reininger et al
illustrates variable QP values". However, the Action's assertion
"for one or both of the color channels" is not supported by
Figure 3. Figure 3 takes an entire frame (all three color
channels) and computes a QP that can vary from macroblock to
macroblock. This QP is stored in the memory qMem in process 27
of Figure 2. Column 5 lines 40 to 42 of Reininger state:

"A working table of quantization factors is kept, in which
the quantization factor for each macroblock is stored."

In other words, while different macroblocks can have
different values for QP, "depending on the amount of coded
data," any particular macroblock has just one QP. This single QP
is applied to all three color components. There is nothing in
Figure 3 that shows or describes different values for either
chroma QP versus the luma QP in the same macroblock.

In Reininger, the QP for luma is also the QP for both chroma channels. Additional confirmation of this fact is found in Reininger at Column 6 lines 58 to 64, which states:

> "The processor 27 is programmed to communicate with the system controller 21 to acquire the bit rate R_{GOP}, and at the end of each encoding pass to acquire the count of encoded bits from the counter 28. Using this data the processor 27 performs the quantization factor adaptation. This process will be described with the aid of the flowchart of FIG. 3."

According to this description, Figure 3 corresponds to process 27 in Figure 2. In Figure 2, counter 28 counts the number of bits required to encode the Y, C_R, and C_B data for each macroblock of a frame. It outputs a single value to process 27. Process 27 outputs from qMem a single value (it's a single line) which is sent to all three quantizers 14. That is, Figure 2 shows a process that combines the bits used for all three colors to compute a single QP which is sent to all three quantizers 14. So the Action's last sentence is correct in that it is true that "depending on the amount of coded data, a new quantization factor 68 may be selected 27 to provide quantization resolution 24", but it is misleading to say "in the color channels" when in fact each and every quantization factor is applied identically to both luma and chroma channels.

Applicant submits that there is nothing in Reininger that refers to different QPs for luma and chroma. There is no mention in Reininger of how QP for chroma would or even could be different from the QP used for luma. There is no indication of different consideration for chroma versus luma anywhere. There is nothing in any figure that indicates different QPs for luma and chroma are possible or allowed. Rather, Figure 2 explicitly supports Applicant's assertion as it shows a single line indicating the single QP determined in the manner of Figure 3 is identically sent to all quantizers.

Lastly, Applicants note that the manner in which Figure 2 is drawn, with the three channels, Y, C_R and C_B, shown separately, can be easily misinterpreted. At first glance it might seem that there are three distinct QPs coming into the quantizers 14, until one notices that they all come from a single output of process 27.

For the reasons given above, Applicant submits that independent claims 8, 12, 37, 41, 66, and 70, and their dependencies, are allowable.

It is believed that all of the pending claims have been addressed in this paper. However, failure to address a specific rejection, issue, or comment, does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above are not intended to be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.
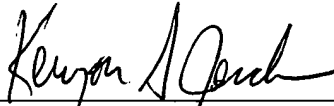
Claims 8-15, 37-44, and 66-73 are in condition for allowance, and a notice to that effect is respectfully solicited. If the Examiner has any questions regarding this response, the Examiner is invited to telephone the undersigned at (858) 678-4331.

Enclosed is our check in the amount of $790.00 for the filing fee of the Request for Continued Examination.

Please apply any other charges or credits to deposit account 06-1050.

Respectfully submitted,

Date: __November 2, 2004__

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